Celanese
The chemistry inside innovation™

Zytel® ST801 NC010

NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® ST801 NC010 is an Unreinforced, Super Toughened, Polyamide 66

Product information

Resin Identification	PA66-HI	ISO 1043
Part Marking Code	>PA66-HI<	ISO 11469
ISO designation	ISO 16396-PA66-I,,M1G1L1NR,S14-020	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	1.8/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.4/-	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	2000/900	MPa	ISO 527-1/-2
Yield stress	50/43	MPa	ISO 527-1/-2
Yield strain	5.7/37	%	ISO 527-1/-2
Nominal strain at break	40/>50	%	ISO 527-1/-2
Flexural Modulus	1800/700	MPa	ISO 178
Flexural Strength	68/-	MPa	ISO 178
Charpy impact strength, 23°C	N/N	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	N/N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	80/115	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	18/17	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	80/90	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	20/20	kJ/m²	ISO 180/1A
Hardness, Rockwell, R-scale	112/89		ISO 2039-2
Poisson's ratio	0.4/0.45		

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Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	263 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	75 / 20	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	64 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 1.8 MPa, annealed	71 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	132 / *	°C	ISO 75-1/-2
Ball pressure test	220 / -	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel	120 / *	E-6/K	ISO 11359-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	120 / -	E-6/K	ASTM E 831
Coeff. of linear therm. expansion, normal	90 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, Normal,23-55°C (73-130°F)	90 / -	E-6/K	ASTM E 831
RTI, electrical, 0.75mm	125	°C	UL 746B
RTI, electrical, 1.5mm	125	°C	UL 746B
RTI, electrical, 3mm	125	°C	UL 746B
RTI, impact, 0.75mm	75	°C	UL 746B
RTI, impact, 1.5mm	75	°C	UL 746B
RTI, impact, 3mm	75	°C	UL 746B
RTI, strength, 0.75mm	85	°C	UL 746B
RTI, strength, 1.5mm	85 / *	°C	UL 746B
RTI, strength, 3mm	85	°C	UL 746B
Hot mandrel	0 / -		IEC 60695-10-2

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.81 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Oxygen index	20 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	750 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	750 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	750 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	725 / -	°C	IEC 60695-2-13
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)
Hot Wire Ignition, 0.75mm	9 / *	s	UL 746A
Hot Wire Ignition, 1.5mm	15 / *	s	UL 746A
Hot Wire Ignition, 3mm	20 / *	s	UL 746A

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Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.2/5.5		IEC 62631-2-1
Relative permittivity, 1MHz	2.9/3.2		IEC 62631-2-1
Dissipation factor, 100Hz	80/1800	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	140/550	E-4	IEC 62631-2-1
Volume resistivity	1E12/1E11	Ohm.m	IEC 62631-3-1
Surface resistivity	*/>1E15	Ohm	IEC 62631-3-2
Electric strength	31/-	kV/mm	IEC 60243-1
Comparative tracking index	600/-		IEC 60112
Arc Resistance	131/*	s	UL 746B
High Amperage Arc Ignition Resistance, 0.75 mm	200/*	arcs	UL 746A
High Amperage Arc Ignition Resistance, 1.5 mm	200/*	arcs	UL 746A
High Amperage Arc Ignition Resistance, 3 mm	200/*	arcs	UL 746A
High Voltage Arc Tracking Rate	7.6/*	mm/min	UL 746A

Other properties

	dry/cond.		
Humidity absorption, 2mm	2/*	%	Sim. to ISO 62
Water absorption, 2mm	6.5/*	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.2[1]/*	%	Sim. to ISO 62
Density	1080/-	kg/m³	ISO 1183
Density of melt	920	kg/m³	

[1]: 3mm wall thickness

Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	290	°C
Min. melt temperature	280	°C
Max. melt temperature	300	°C
Max. screw tangential speed	0.3	m/s
Mold Temperature Optimum	80	°C
Min. mould temperature	50	°C
Max. mould temperature	100	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	4	s/mm
Back pressure	As low as possible	MPa
Ejection temperature	190	°C

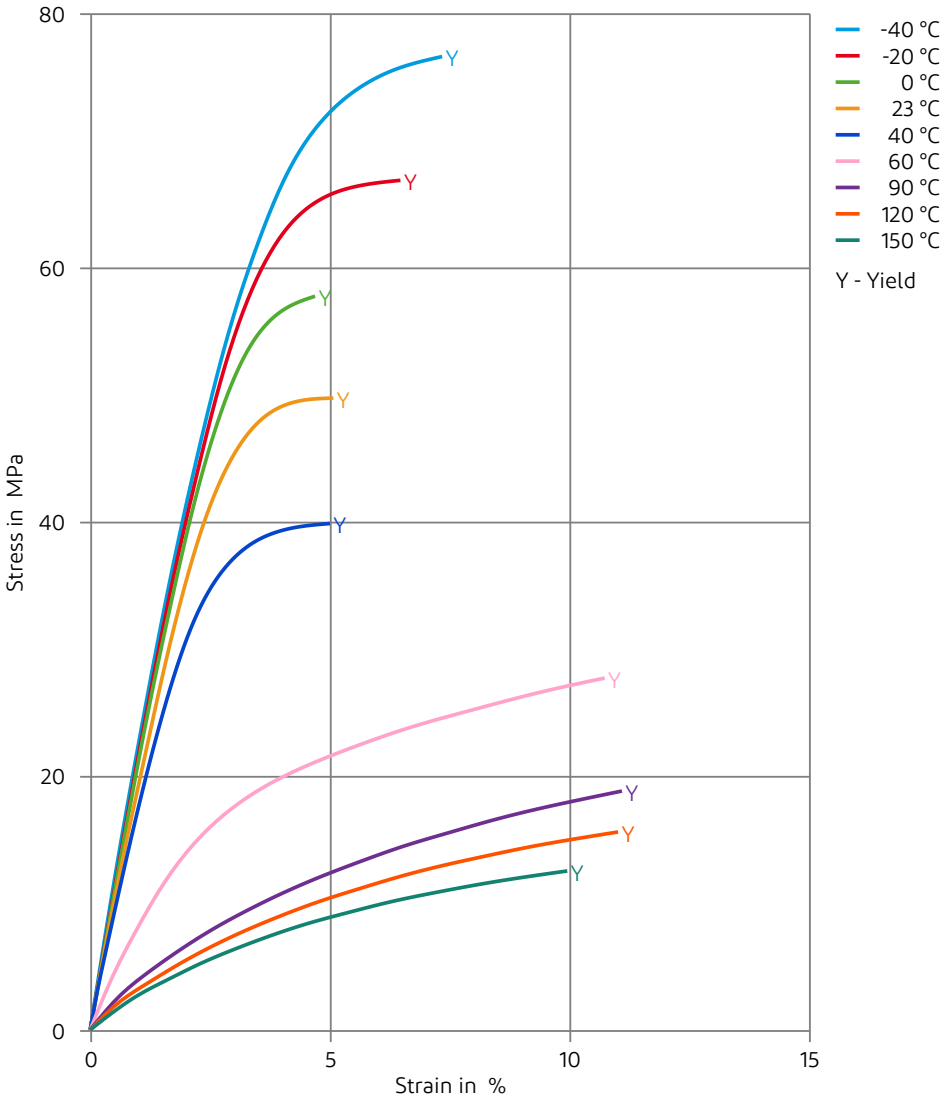
Zytel® ST801 NC010

NYLON RESIN

Extrusion

Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	3 - 4 h
Processing Moisture Content	≤0.06 %
Melt Temperature Optimum	280 °C
Melt Temperature Range	275 - 290 °C

Stress-strain (dry)
(measured on Zytel® ST801 BK010A)



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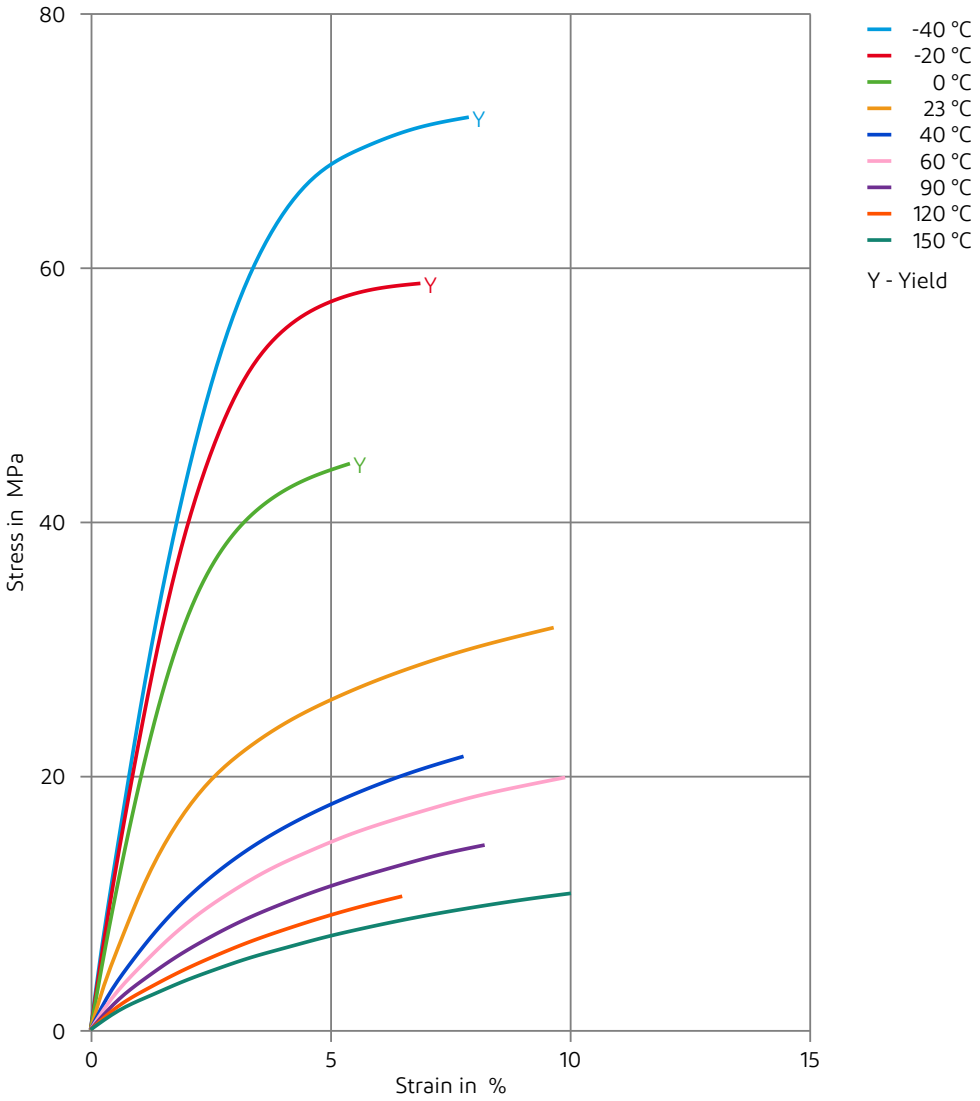
Stress-strain (cond.)
(measured on Zytel® ST801 BK010A)



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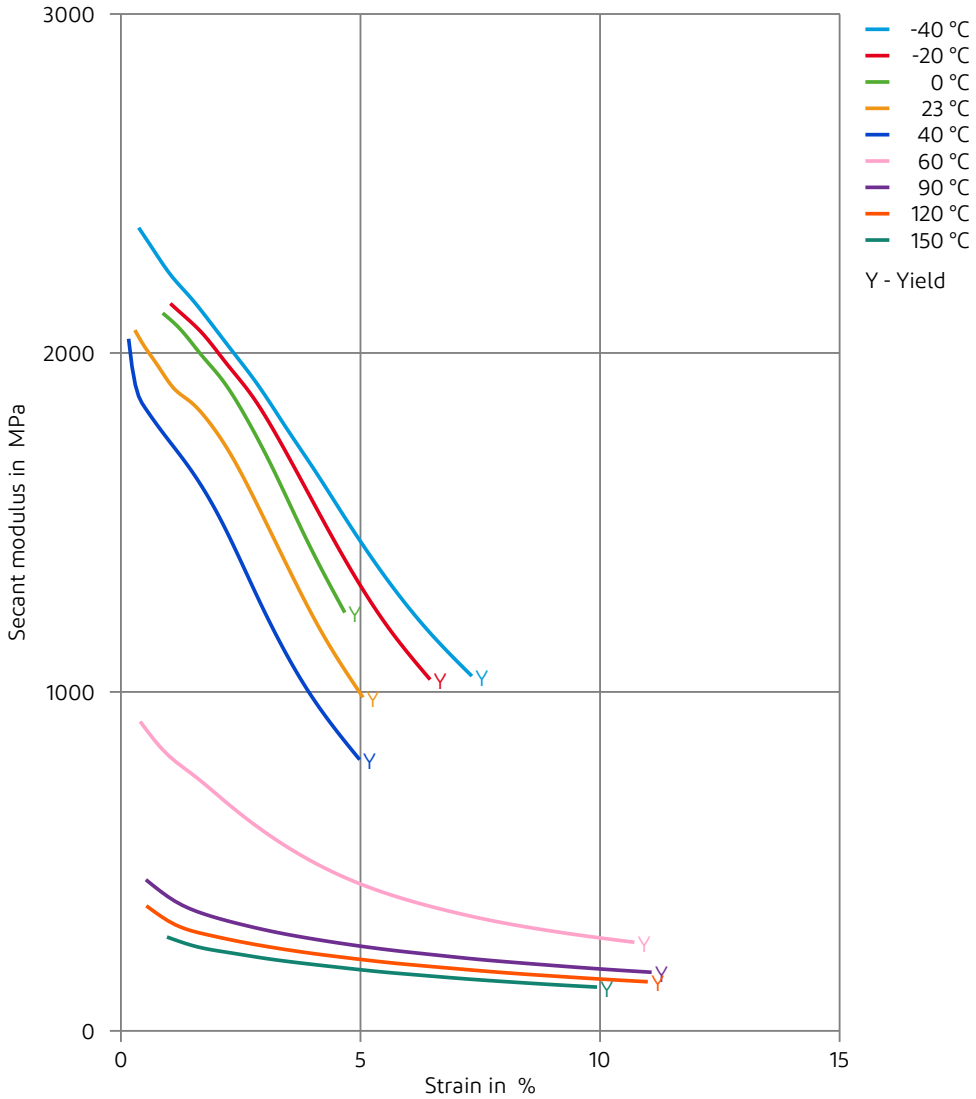
Secant modulus-strain (dry)
(measured on Zytel® ST801 BK010A)



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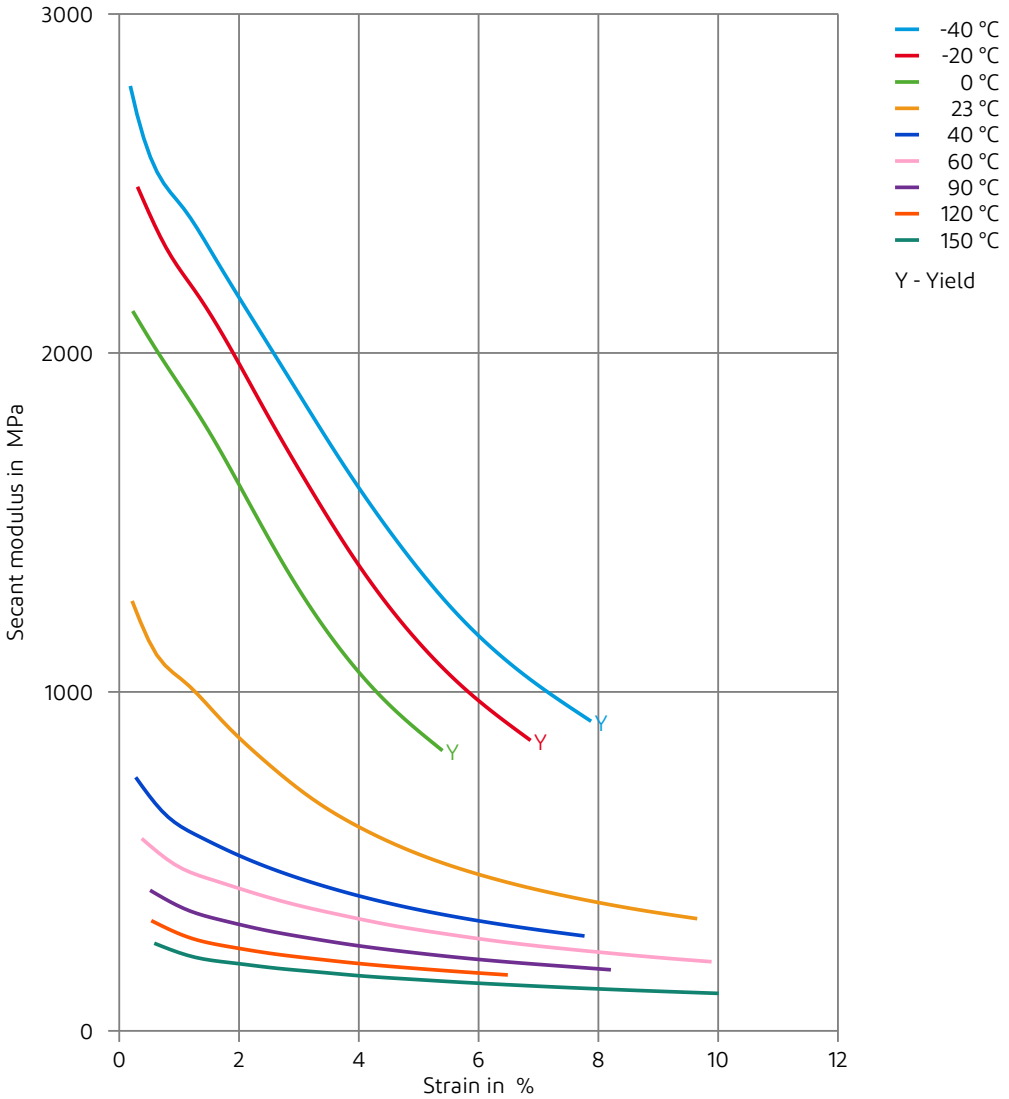
Secant modulus-strain (cond.)
(measured on Zytel® ST801 BK010A)



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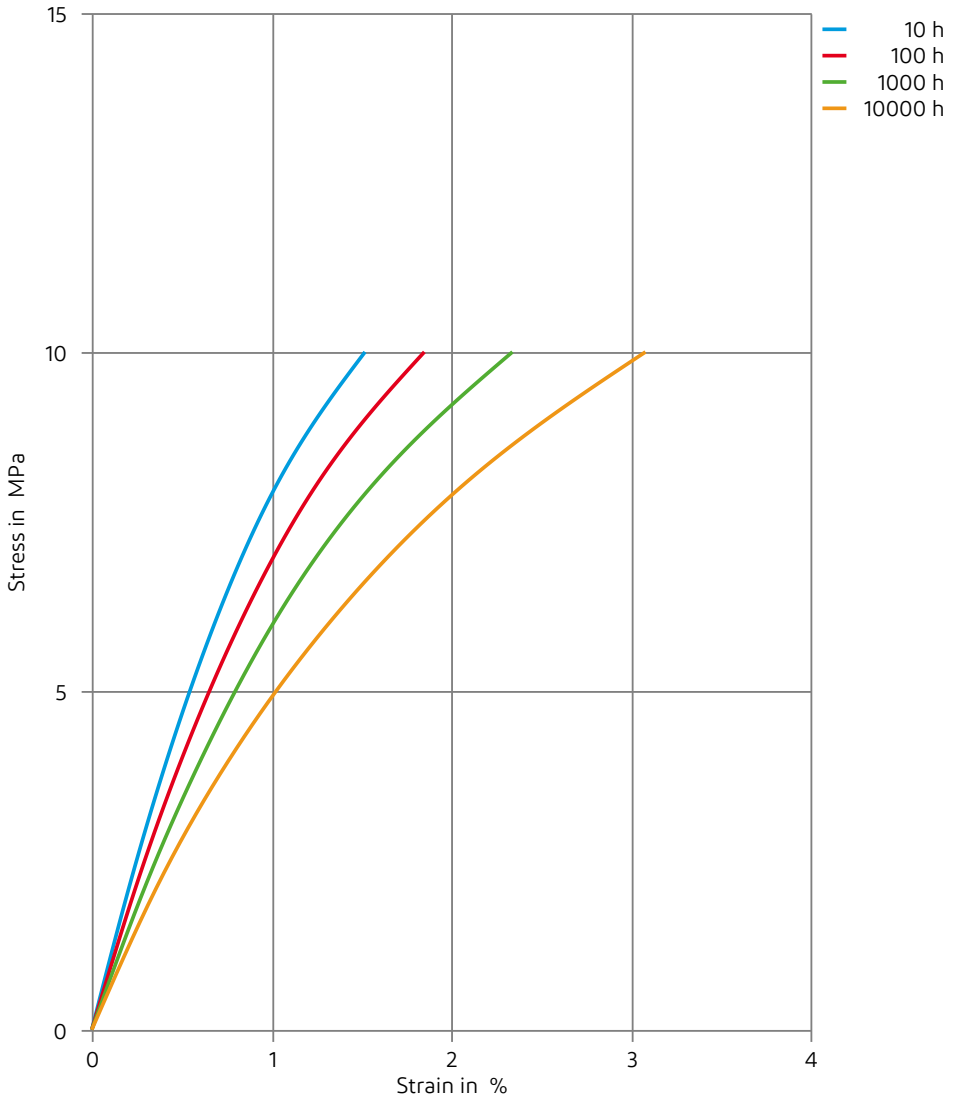
Stress-strain (isochronous) 23°C (cond.) (measured on Zytel® ST801 NC010A)



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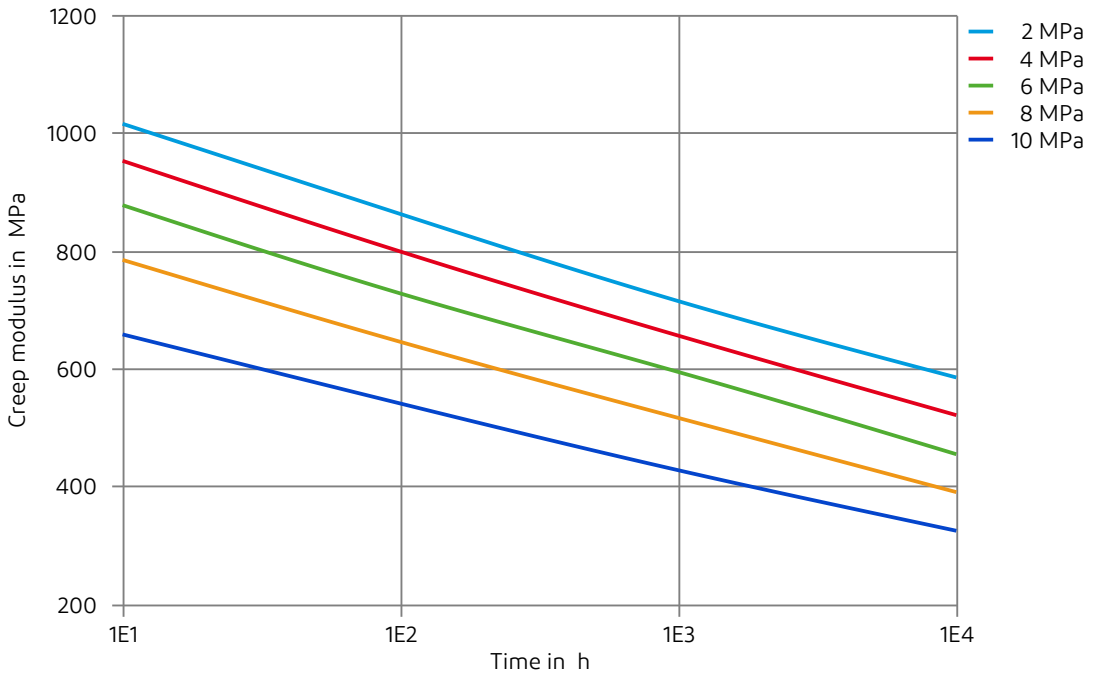
Creep modulus-time 23°C (cond.)
(measured on Zytel® ST801 NC010A)



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Chemical Media Resistance

Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

Standard Fuels

- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C

Other

- ✔ Water, 23°C
- ✔ Water, 90°C

Symbols used:

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).